

**Section II (Amendment of the Claims)**

Please cancel claims 2, 5 and 16-17, amend claims 1, 3, 4, 6, 7, 8, 9, 10, 11 and 12, and add new claim 18, as set out below in the listing of claims 1-17 of the application.

1. (Currently amended) A composition for preventing protein degradation, which ~~contains~~ comprising an effective amount of small heat shock proteins (sHSPs) ~~protein~~ (sHSP), wherein said sHSP includes at least one sHSP selected from the group consisting of:

IbpA(inclusion body-associated protein A) derived from *Agrobacterium tumefaciens*;

sHSPs derived from *Arabidopsis thaliana*;

HspB (heat shock protein B), HspH (heat shock protein H), HspC (heat shock protein C) and

HspF (heat shock protein F) derived from *Bradyrhizobium japonicum*;

IbpA derived from *Brucella suis*;

sHSPs derived from *Buchnera aphidicola*;

IbpA derived from *Buchnera aphidicola* str. APS (*Acyrthosiphon pisum*);

sHSPs derived from *Citrus tristeza* virus;

IbpA and IbpB (inclusion body-associated protein B) derived from *Escherichia coli*;

IbpB derived from *Helicobacter pylori*;

Hsp27 and  $\alpha, \beta$ -crystallin derived from Human;

Hsp16.5 derived from *Methanococcus jannaschii*;

IbpA derived from *Methanopyrus kandleri*;

Hsp25 derived from Murine;

sHSPs derived from *Mycobacterium leprae*;

Hsp16.3 derived from *Mycobacterium tuberculosis*;

IbpB derived from *Pirellula* sp.;

Hsp18.1 derived from *Pisum sativum*(pea);

sHSPs derived from *Plasmodium falciparum*;

IbpA derived from *Pseudomonas aeruginosa*;

IbpA derived from *Pseudomonas putida*;

Hsp26 derived from *Saccharomyces cerevisiae*;

IbpA and IbpB derived from *Salmonella enterica*;

IbpA and IbpB derived from *Salmonella typhimurium*;

IbpA derived from *Shewanella oneidensis*;

IbpA and IbpB derived from *Shigella flexneri*;

IbpA derived from *Sinorhizobium meliloti*;

IbpA derived from *Streptococcus pyogenes*;

sHSPs derived from *Streptomyces coelicolor*;

sHSPs derived from *Sulfolobus solfataricus*;

Hsp16 derived from *Synechococcus vulgaris*;

IbpA derived from *Thermoanaerobacter tengcongensis*;

IbpA derived from *Thermoplasma acidophilum*; and

sHSPs IbpA and IbpB derived from *Yersinia pestis*.

2. (Canceled)

3. (Currently amended) The composition according to claim [[2]] 1, wherein the sHSPs are one or more said sHSP includes at least one sHSP selected from the group consisting of inclusion body-associated protein A, inclusion body-associated protein B, inclusion body-associated protein AB, and heat shock protein 26 IbpA, IbpB, IbpAB and HSP26.

4. (Currently amended) A composition for use in 2-D gel electrophoresis, which contains comprising an effective amount of sHSPs small heat shock protein (sHSP), wherein said sHSP includes at least one sHSP selected from the group consisting of:

IbpA(inclusion body-associated protein A) derived from *Agrobacterium tumefaciens*;

sHSPs derived from *Arabidopsis thaliana*;

HspB (heat shock protein B), HspH (heat shock protein H), HspC (heat shock protein C) and

HspF (heat shock protein F) derived from *Bradyrhizobium japonicum*;

IbpA derived from *Brucella suis*;

sHSPs derived from *Buchnera aphidicola*;

IbpA derived from *Buchnera aphidicola* str. APS (*Acyrhosiphon pisum*);

sHSPs derived from *Citrus tristeza* virus;

IbpA and IbpB (inclusion body-associated protein B) derived from *Escherichia coli*;

IbpB derived from *Helicobacter pylori*;

Hsp27 and  $\alpha, \beta$ -crystallin derived from Human;

Hsp16.5 derived from *Methanococcus jannaschii*;

IbpA derived from *Methanopyrus kandleri*;  
Hsp25 derived from Murine;  
sHSPs derived from *Mycobacterium leprae*;  
Hsp16.3 derived from *Mycobacterium tuberculosis*;  
IbpB derived from *Pirellula sp.*;  
Hsp18.1 derived from *Pisum sativum*(pea);  
sHSPs derived from *Plasmodium falciparum*;  
IbpA derived from *Pseudomonas aeruginosa*;  
IbpA derived from *Pseudomonas putida*;  
Hsp26 derived from *Saccharomyces cerevisiae*;  
IbpA and IbpB derived from *Salmonella enterica*;  
IbpA and IbpB derived from *Salmonella typhimurium*;  
IbpA derived from *Shewanella oneidensis*;  
IbpA and IbpB derived from *Shigella flexneri*;  
IbpA derived from *Sinorhizobium meliloti*;  
IbpA derived from *Streptococcus pyogenes*;  
sHSPs derived from *Streptomyces coelicolor*;  
sHSPs derived from *Sulfolobus solfataricus*;  
Hsp16 derived from *Synechococcus vulgaris*;  
IbpA derived from *Thermoanaerobacter tengcongensis*;  
IbpA derived from *Thermoplasma acidophilum*; and  
sHSPs IbpA and IbpB derived from *Yersinia pestis*.

5. (Canceled)

6. (Currently amended) The composition according to claim 5 4, wherein the sHSPs are one or more said sHSP includes at least one sHSP selected from the group consisting of IbpA, IbpB, IbpAB and HSP26.

7. (Currently amended) A method for the 2-D gel electrophoresis of a protein mixture comprising a combination of different proteins, which said method comprising the steps of:  
adding at least one small heat shock protein (sHSP) sHSPs to the protein mixture, so as to prevent protein degradation and obtain gels a gel with an increased number of spots as compared

to a gel obtained for a corresponding mixture lacking said at least one small heat shock protein,  
wherein said at least one sHSP is selected from the group consisting of:

IbpA (inclusion body-associated protein A) derived from *Agrobacterium tumefaciens*;

sHSPs derived from *Arabidopsis thaliana*;

HspB (heat shock protein B), HspH (heat shock protein H), HspC (heat shock protein C) and

HspF (heat shock protein F) derived from *Bradyrhizobium japonicum*;

IbpA derived from *Brucella suis*;

sHSPs derived from *Buchnera aphidicola*;

IbpA derived from *Buchnera aphidicola* str. APS (*Acyrhosiphon pisum*);

sHSPs derived from *Citrus tristeza* virus;

IbpA and IbpB (inclusion body-associated protein B) derived from *Escherichia coli*;

IbpB derived from *Helicobacter pylori*;

Hsp27 and  $\alpha, \beta$ -crystallin derived from *Human*;

Hsp16.5 derived from *Methanococcus jannaschii*;

IbpA derived from *Methanopyrus kandleri*;

Hsp25 derived from *Murine*;

sHSPs derived from *Mycobacterium leprae*;

Hsp16.3 derived from *Mycobacterium tuberculosis*;

IbpB derived from *Pirellula sp.*;

Hsp18.1 derived from *Pisum sativum* (pea);

sHSPs derived from *Plasmodium falciparum*;

IbpA derived from *Pseudomonas aeruginosa*;

IbpA derived from *Pseudomonas putida*;

Hsp26 derived from *Saccharomyces cerevisiae*;

IbpA and IbpB derived from *Salmonella enterica*;

IbpA and IbpB derived from *Salmonella typhimurium*;

IbpA derived from *Shewanella oneidensis*;

IbpA and IbpB derived from *Shigella flexneri*;

IbpA derived from *Sinorhizobium meliloti*;

IbpA derived from *Streptococcus pyogenes*;

sHSPs derived from *Streptomyces coelicolor*;

sHSPs derived from *Sulfolobus solfataricus*;

Hsp16 derived from *Synechococcus vulgaris*;

IbpA derived from *Thermoanaerobacter tengcongensis*;

IbpA derived from *Thermoplasma acidophilum*; and  
sHSPs IbpA and IbpB derived from *Yersinia pestis*; and  
subjecting the protein mixture containing the sHSPs comprising said at least one small  
heat shock protein to 2-D gel electrophoresis.

8. (Currently amended) The method according to claim 7, wherein said gel with an increased number of spots has at least 50% more spots than the gel obtained for the corresponding mixture lacking said at least one small heat shock protein the sHSPs are one or more selected from the proteins of Table 1.

9. (Currently amended) The method according to claim 8 A method for the 2-D gel electrophoresis of a mixture comprising a combination of different proteins, which comprises:

adding small heat shock protein (sHSP) to the mixture, so as to prevent protein degradation and obtain a gel with an increased number of spots as compared to a gel of a corresponding mixture lacking added sHSP; and

subjecting the mixture comprising the added sHSP to 2-D gel electrophoresis,  
wherein the added sHSP comprises at least one sHSP sHSPs are one or more selected from the group consisting of inclusion body-associated protein A (IbpA), inclusion body-associated protein B (IbpB) and inclusion body-associated protein AB (IbpAB) derived from *E. coli*, inclusion body-associated protein A (IbpA) derived from *Pseudomonas* and heat shock protein 26 (HSP26) derived from *Saccharomyces cerevisiae*.

10. (Currently amended) The method according to claim 7, wherein the amount of the at least one sHSP sHSPs that is added is in a range of 0.1 to 50 parts, relative to 100 parts by weight of the total protein of an electrophoresis sample.

11. (Currently amended) The method according to claim 10, wherein the amount of the at least one sHSP sHSPs that is added is 0.5 to 20 parts, relative to 100 parts by weight of the total protein.

12. (Currently amended) The method according to claim 7, wherein the combination of different proteins in said protein mixture is total protein in specific cells.

13. (Original) The method according to claim 12, wherein the specific cells are prokaryotes or eukaryotes.

14. (Original) The method according to claim 13, wherein the prokaryotes are *E. coli* or *Pseudomonas* sp. microorganisms, and the eukaryotes are human-derived cells.

15. (Original) A method for the analysis of proteomes by 2-D gel electrophoresis, which is characterized by using the composition of claim 1.

16. (Cancelled)

17. (Cancelled)

18. (New) A method for the 2-D gel electrophoresis of a mixture comprising a combination of different proteins, which comprises:

adding small heat shock protein (sHSP) to the mixture, so as to prevent protein degradation and obtain a gel with an increased number of spots as compared to a gel of a corresponding mixture lacking added sHSP; and

subjecting the mixture comprising the added sHSP to 2-D gel electrophoresis, wherein the added sHSP comprises at least one small heat shock protein (sHSP) derived from an organism selected from the group consisting of *Agrobacterium tumefaciens* str. C58 (U. Washington), *Arabidopsis thaliana* *Bradyrhizobium japonicum*, *Brucella suis* 1330, *Buchnera aphidicola* plasmid pBPS1, *Buchnera aphidicola* str. APS (*Acyrthosiphon pisum*), *Citrus tristeza* virus, *Escherichia coli* CFT073, *Escherichia coli* K12, *Escherichia coli* O157:H7 EDL933, *Escherichia coli* O157:H7, *Helicobacter pylori* 26695, Human, *Methanococcus jannaschii*, Murine, *Mycobacterium leprae* strain TN, *Mycobacterium tuberculosis*, *Pirellula* sp., *Pisum sativum*(pea), *Plasmodium falciparum* 3D7, *Pseudomonas aeruginosa* PA01, *Pseudomonas putida* KT2440, *Saccharomyces cerevisiae*, *Salmonella enterica* subsp. *enterica* serovar *Typhi* *Salmonella typhimurium* LT2, *Shewanella oneidensis* MR-1, *Shigella flexneri* 2a str. 2457T, *Shigella flexneri* 2a str. 301, *Sinorhizobium meliloti* 1021, *Sinorhizobium meliloti* plasmid pSymA, *Streptococcus pyogenes*, *Streptomyces coelicolor* A3(2), *Sulfolobus solfataricus*, *Synechococcus vulgaris*, *Thermoanaerobacter tengcongensis* strain MB4T, *Thermoplasma acidophilum*, *Yersinia pestis* KIM, and *Yersinia pestis* strain CO92.